



UPDATE for the Feasibility of a Stormwater Retrofit At Former Duke Diet and Fitness Center

November 20, 2012

Sandra Wilbur, PE and Paul Wiebke, PE

*Public Works
Stormwater Services*

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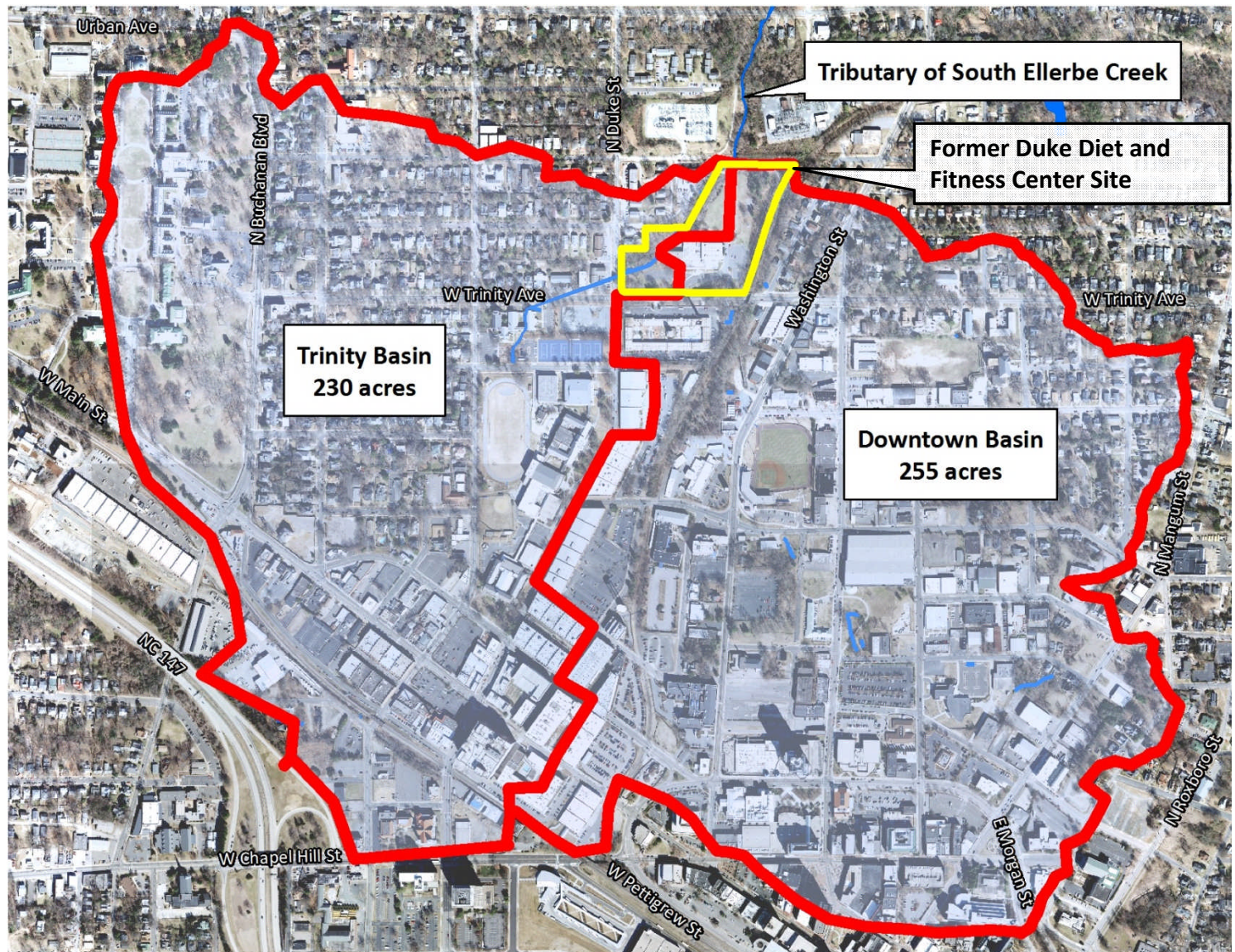
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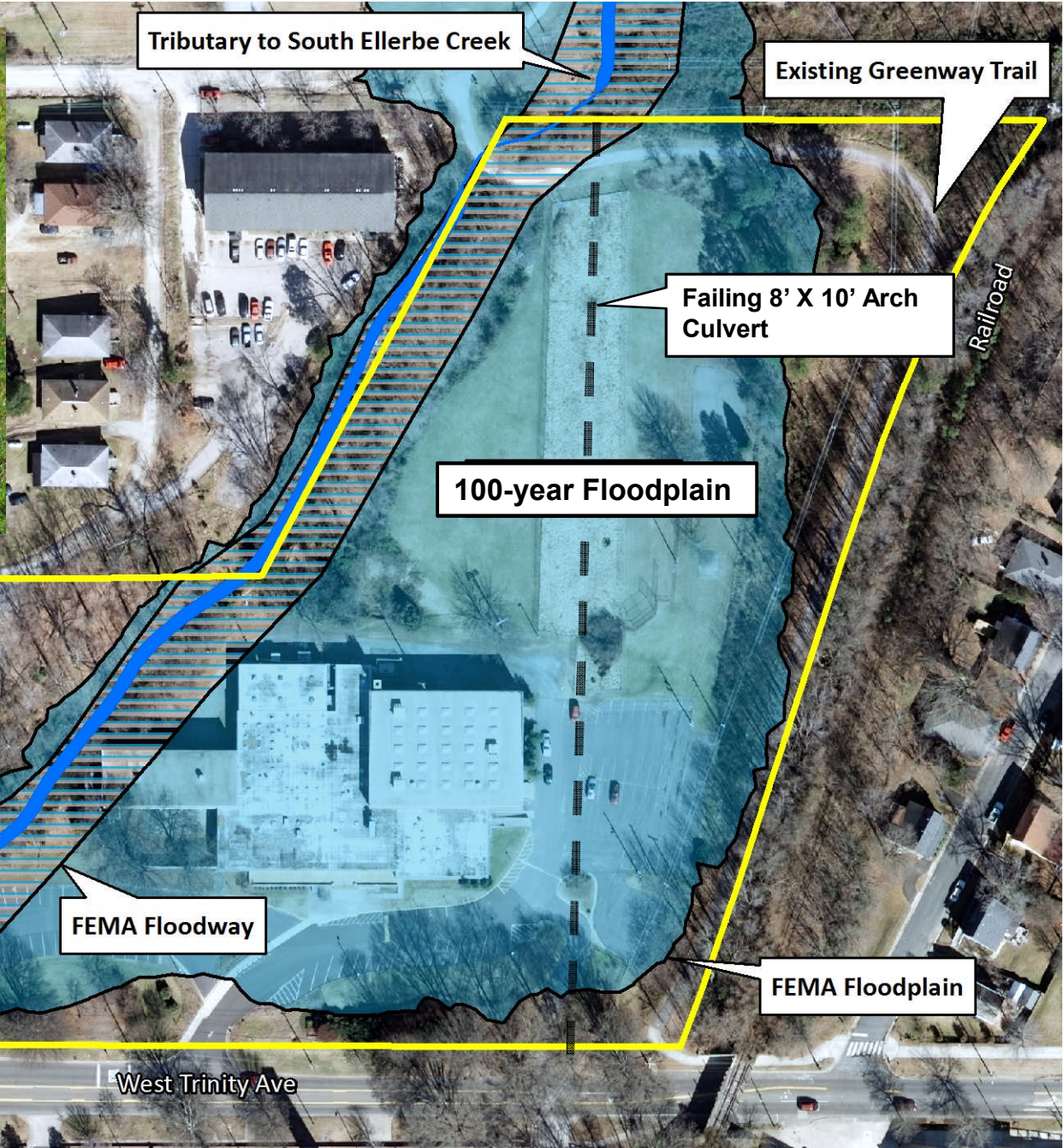
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485 acres could be treated

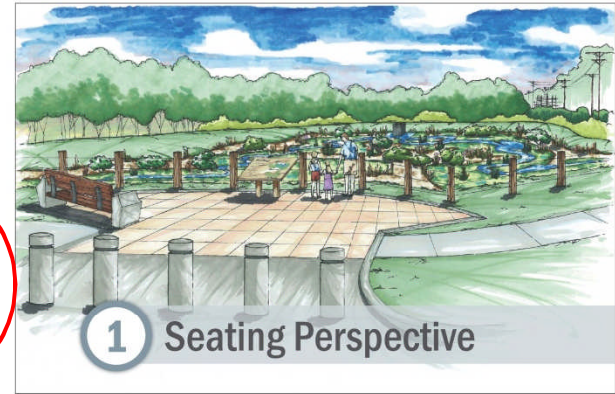


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Proposed Wetland and Potential Amenities





Public Outreach

City sets 3 wetland sessions

From Staff Reports

Durham residents interested in the proposed South Ellerbe Creek wetland concept plan at the former Duke Diet and Fitness Center should plan to attend one of several public information meetings to provide feedback.

The public is encouraged to attend any of the following public meetings to ask questions and learn more about the proposed concept plan.

A presentation will be given at the beginning of each meeting:

■ Tuesday, June 26 at 7 p.m. — InterNeighborhood Council Meeting, City of Durham Neighborhood Improvement Services Department, Golden Belt Building 2, 3rd Floor Conference Room, 807 E. Main

St.

■ Thursday, July 12 at 6:30 p.m. — Durham City Hall, Second Floor Committee Room, 101 City Hall Plaza

■ Tuesday, August 7 at 7 p.m. — North Regional Library Meeting Room, 221 Milton Road

The City's South Ellerbe Wetland Concept Plan proposes changing the former Duke Diet and Fitness Center site into a constructed wetland, which is located along the creek tributary and greenway trail.

The concept plan proposes redirecting the tributary of South Ellerbe Creek into a newly constructed wetland.

The proposed wetland would include a shallow marsh, deep marsh, and deep pool areas with a variety of native vegetation.

The proposed construction would filter pollution out of the stormwater runoff that accumulates from the 485-acre area of downtown Durham.

The proposed plan will improve the vegetation and habitat conditions in the creek as well as add amenities such as seating areas for recreational and educational purposes.

Residents who are unable to attend the public information meetings are encouraged to view the concept plan on the project website at <http://www.DurhamNC.gov/Stormwater>.

Residents may submit comments to Sandra Wilbur at Sandra.Wilbur@DurhamNC.gov or Lance Fontaine at Lance.Fontaine@DurhamNC.gov.



CITY OF DURHAM
Office of Public Affairs
101 CITY HALL PLAZA
DURHAM, NC 27701

News Release

For Immediate Release: June 13, 2012

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Public Input Sought on Durham's South Ellerbe Wetland Concept Plan

Public Meetings Set to Discuss Proposed Stormwater Wetland at Former Duke Diet and Fitness Center

DURHAM, N.C. — Durham residents interested in the proposed South Ellerbe Creek wetland concept plan at the former Duke Diet and Fitness Center should plan to attend one of several public information meetings to provide feedback.

The public is encouraged to attend any of the following public meetings to ask questions and learn more about the proposed concept plan. A presentation will be given at the beginning of each meeting:

- Tuesday, June 26 at 7 p.m. — InterNeighborhood Council Meeting, City of Durham Neighborhood Improvement Services Department, Golden Belt Building 2, 3rd Floor Conference Room, 807 E. Main St., Durham
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The City's South Ellerbe Wetland Concept Plan proposes changing the former Duke Diet and Fitness Center site into a constructed wetland, which is located along the creek tributary and greenway trail. The concept plan proposes redirecting the tributary of South Ellerbe Creek into a newly constructed wetland. The proposed wetland would include a shallow marsh, deep marsh, and deep pool areas with a variety of native vegetation.



Public Outreach



learn more about
South Ellerbe Wetland Concept Plan

A STORMWATER SERVICES PUBLICATION

The City of Durham's South Ellerbe Wetland Concept Plan proposes to change the site of the former Duke Diet and Fitness Center into a constructed wetland. The former Duke Diet and Fitness Center, bounded by West Trinity Road, Dorian Avenue, and North Duke Street, is located on the South Ellerbe Creek Greenway Trail along a tributary of the creek. The proposed constructed wetland would filter pollution out of the stormwater runoff that accumulates from the Trinity and Downtown Basins, a 455-acre area of downtown Durham.

The concept plan includes re-directing the tributary of South Ellerbe Creek into the new constructed wetland; constructing shallow marsh, deep marsh, and deep pool areas in the wetland with a variety of native vegetation; improving the vegetation and habitat conditions to the creek; re-aligning the South Ellerbe Creek Trail; and adding amenities, such as seating areas, for recreational and educational purposes.

The City is seeking input from citizens on the proposed concept plan for the site. The public is encouraged to attend the upcoming public meetings to ask questions and learn more about the proposed concept plan.

Upcoming Meetings

- June 26, 2012**
1st Neighborhood Council Meeting
Golden Belt, Building 2
City of Durham
Neighborhood Improvement Services
3rd Floor Conference Room
807 E. Main St., Durham, NC
7:00 pm
- July 12, 2012**
New Location: Council Chambers
Public Meeting, Durham City Hall
Council Chambers
303 City Hall Plaza, Durham, NC
6:30 pm
- August 7, 2012**
Public Meeting
North Regional Library
Meeting Room, 221 Milton Road,
Durham, NC
7:00 pm

Notice Under the Americans with Disabilities Act: Persons who require assistance should call (919) 560-4197. TTY (919) 560-1020. Or e-mail ADA@DurhamNC.gov no later than 48 hours before the event.

For more information, please contact:
Sandra Wilbur, PE & Lana Fortner, PhD
City of Durham Department of Public Works, Stormwater Services
(919) 560-4210
Sandra.Wilbur@durhamnc.gov / Lana.Fortner@durhamnc.gov

More information
www.DurhamNC.gov/Stormwater

12
MEETINGS

250
PEOPLE



Public Works
Stormwater Services

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Public Outreach Materials

DURHAM



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learn more about South Ellerbe Wetland Concept Plan

A FORTY-ONE ACRE WETLAND
The City of Durham's South Ellerbe Wetland Concept Plan proposes to change the site of the former Duke Diet and Fitness Center into a constructed wetland. The former Duke Diet and Fitness Center, bounded by West Trinity Road, Gadsden Avenue, and North Duke Street, is located on the South Ellerbe Creek Greenway Trail along a tributary of the creek. The proposed constructed wetland would filter pollutants out of the stormwater runoff that accumulates from the Trinity and Downtown Basins, a 485-acre area of downtown Durham.

The concept plan includes redefining the tributary of South Ellerbe Creek into the new constructed wetland, constructing shallow marsh, deep marsh, and deep pool areas in the wetland with a variety of native vegetation, improving the vegetation and habitat conditions to the creek, widening the South Ellerbe Creek Trail, and adding amenities, such as seating areas, for recreational and educational purposes. The City is seeking input from citizens on the proposed concept plan for the site. The public is encouraged to attend the upcoming public meetings to ask questions and learn more about the proposed concept plan.

Proposed South Ellerbe Wetland
Site of former Duke Diet and Fitness Center

Upcoming Meetings

- June 20, 2012**
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Meeting Room, 221 Milton Road
Durham, NC
7:00 pm

Notice (under the Americans with Disabilities Act): Persons who require assistance should call (919) 560-4326. If you are unable to attend, please email publicoutreach@durhamnc.gov or visit our website www.durhamnc.gov/stormwater for more information.

MORE information
To learn more about the project, visit www.durhamnc.gov/stormwater or call (919) 560-4326.
Sandra Wilbur@durhamnc.gov | Lance Fontaine@durhamnc.gov

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The Feasibility of a Stormwater Retrofit At Former Duke Diet and Fitness Center

July 12, 2012
Paul Wiebke, PE and Sandra Wilbur, PE

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South Ellerbe Wetland Project

July 12

Project Facts – Proposed South Ellerbe Wetland Project

- The City's Public Works Department is **proposing** to construct a wetland at the site of the former Duke Diet and Fitness Center, 301 City Hall Plaza.
- If constructed, this wetland will filter pollutants from this project's runoff.
- In January 2011, the City's Public Works Department adopted the State of North Carolina's Falls Lake Rules. These rules aim to improve water quality in Falls Lake by reducing the amount of pollution coming from stormwater runoff from new and existing development, wastewater treatment plants, and agriculture. The Falls Lake Rules require a reduction in the amount of nitrogen and phosphorus entering the lake. These pollutants are a major concern because they cause algae blooms and affect the water quality and uses of the lake. Falls Lake is a major water supply and is used as food control, a fish and wildlife conservation area, and recreation.
- If constructed, this project could eliminate 500–1000 pounds of nitrogen annually as well as remove additional pollutants from the heavily developed area of Durham from flowing to Falls Lake. It would require 10–20 smaller projects to achieve that same amount of pollution reduction. Additionally, this project would benefit Elletts Creek and South Ellerbe Creek by providing flood control, improving aquatic health and reducing pollutants such as zinc, bacteria, sediment, nitrogen, and phosphorus.

Why was this site identified for this project? What is ultimately driving it?

In January 2011, the City of Durham completed the Elletts Creek Watershed Improvement Plan in 2010. This plan was developed to proactively address water quality regulations and to improve the health of the Elletts Creek Watershed. To accomplish this goal, the plan assessed current stream and watershed conditions, identified existing water quality problems, evaluated future water quality conditions, and developed a water quality improvement plan to try to ensure the City to meet its goals for water quality and watershed health. The plan offered recommendations including identifying 73 potential stormwater control projects throughout Elletts Creek. These projects were ranked and prioritized based on water quality benefit, stream protection, cost, community enhancement opportunity, access and implementation issues, public safety, and other considerations. Through this process, the site of the former Duke Diet and Fitness Center was identified as a location for a stormwater control measure.

What is unique about this site?

The City of Durham currently owns the site. This site receives stormwater runoff from 485 acres of developed area in Durham. The average drainage area treated by the other stormwater control measures identified in the Elletts Creek Watershed Improvement Plan is only 40 acres. Based on size and geographic location of this site, it is estimated that this single wetland project can treat a large area of urban downstream development. The project is estimated to reduce the nitrogen and phosphorus annual loading by 100–1000 pounds.

Why does this site receive so much stormwater runoff?

It is a natural low-point where stormwater runoff collects from the City's drainage system. The property is located in the 100-year floodplain and partially in the floodway where buildings or fill are not normally allowed. The property's location within the floodplain presents a financial and flooding risk for any structural development on-site.

Who currently owns the site?

Duke University currently owns the site.

What is the proposed project and how will it work?

The proposed project is a constructed wetland. Constructed wetlands are built to mimic the functions of natural wetlands. As stormwater flows through the site, wetland microbes, plants, and soil filter pollutants and treat the water through natural ecological processes.

Is a constructed wetland similar to a wet pond?

There are similarities as both devices are designed to treat stormwater runoff to remove pollutants. The most obvious difference is that wet ponds usually have a single large, open pool of water. But constructed wetlands have many

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South Ellerbe Wetland Project

July 12

F.A.Q. – Frequently Asked Questions Proposed South Ellerbe Wetland Project

Why is there a need for this project? What is ultimately driving it?

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INSIDE CITY HALL
City of Durham / Inside City Hall / Operations / Public Works Department / Stormwater Services / Former Duke Diet and Fitness Wetland Concept Public Input

Administrative and Support
Audit Services Department
City Council
City Manager
City Clerk
Office of Public Affairs
Office of the City Attorney
Office of the City Clerk
Office of the City Manager
Office of the Mayor
Operations

Public Works
Public Works Home
Stormwater Home

Former Duke Diet and Fitness Wetland Concept Public Input

South Ellerbe Wetland

A constructed wetland that will filter polluted stormwater from 485 acres of downtown is being considered for the former Duke Diet and Fitness Center site on West Trinity Avenue. This location is unique in its ability to treat a large amount of runoff. Two drainage areas, Trinity and Downtown, converge at the site. Finding places in the developed downtown area to treat water pollution is a challenge. Building one large wetland could save the City money in the long run.

The City is seeking input on the proposed concept plan for the site. Several public meetings are being held for the public to ask questions and learn more about the proposed concept plan. For information, contact Sandra Wilbur or Lance Fontaine.

Dates and Locations
July 13, 2012, Durham City Hall, Council Chamber, 301 City Hall Plaza, Durham, NC at 6:30 p.m.
August 7, 2012, North Regional Library Meeting Room, 221 Milton Rd. at 7 p.m.

Meeting Announcement Flyer
South Ellerbe Wetland Fact Sheet
Feasibility Study for a Stormwater Retrofit at Former Duke Diet and Fitness Center
South Ellerbe Wetland Concept Plan
Presentation of the Feasibility of a Stormwater Retrofit at Former Duke Diet and Fitness Center 7-12-2012
South Ellerbe Wetland Q&A July 2012

Additional Information
Photos of Smaller Constructed Wetlands in Durham
City of Durham State of Our Streams Report
City of Durham Elletts Creek Watershed Information
City of Durham Elletts Creek Watershed Improvement Plan

Resources
North Carolina Division of Water Quality Stormwater Best Management Practices Manual - See Chapter 3 Stormwater Calculations and Chapter 9 Stormwater Wetland for additional design and calculation information.

Technical Memorandum

Project Title: Proposed Stormwater Control Measure Retrofit at Former Duke Diet and Fitness Center Site
Project No.: 201204
Technical Memorandum No. 1
Subject: Constructed Stormwater Control Measure Water Quality Analysis
Date: June 2012
By: Sandra Wilbur, City of Durham Stormwater Services

Prepared by:
Sandra Wilbur, PE, Project Engineer

Reviewed by:
Michael Foster, PE, Project Manager

Limitations:
This report was prepared by the City of Durham as part of a project to assess the feasibility of a stormwater retrofit at the former Duke Diet and Fitness Center site. The report is intended for use by the City of Durham and its staff. It is not intended for use by any other party. The report is based on the information provided by the City of Durham and its staff. It is not intended to be used as a basis for any legal action. The report is not intended to be used as a basis for any other action.

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Emails

*“Dear Ms. Wilbur,
I would like to endorse the
concept for the wetlands.”*

"I hope you'll continue to educate the residents and that the project will move forward."

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Public Outreach Process

Most Common Issues:

1. What other uses is the City considering for the site?
2. Can the building be saved?
3. What community amenities will be provided in the design?

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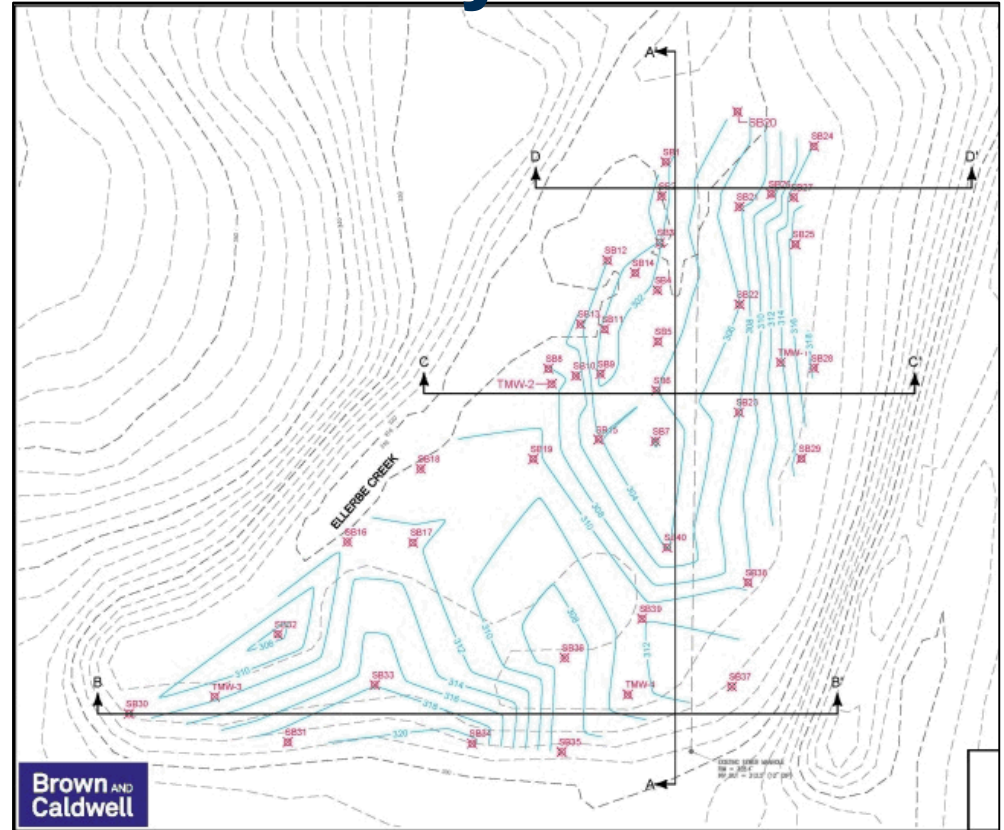
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Project Feasibility UPDATES

- Soil boring results indicate depth of bedrock is adequate



- Pre-Application meeting with USACE and NCDENR did not raise any red flags

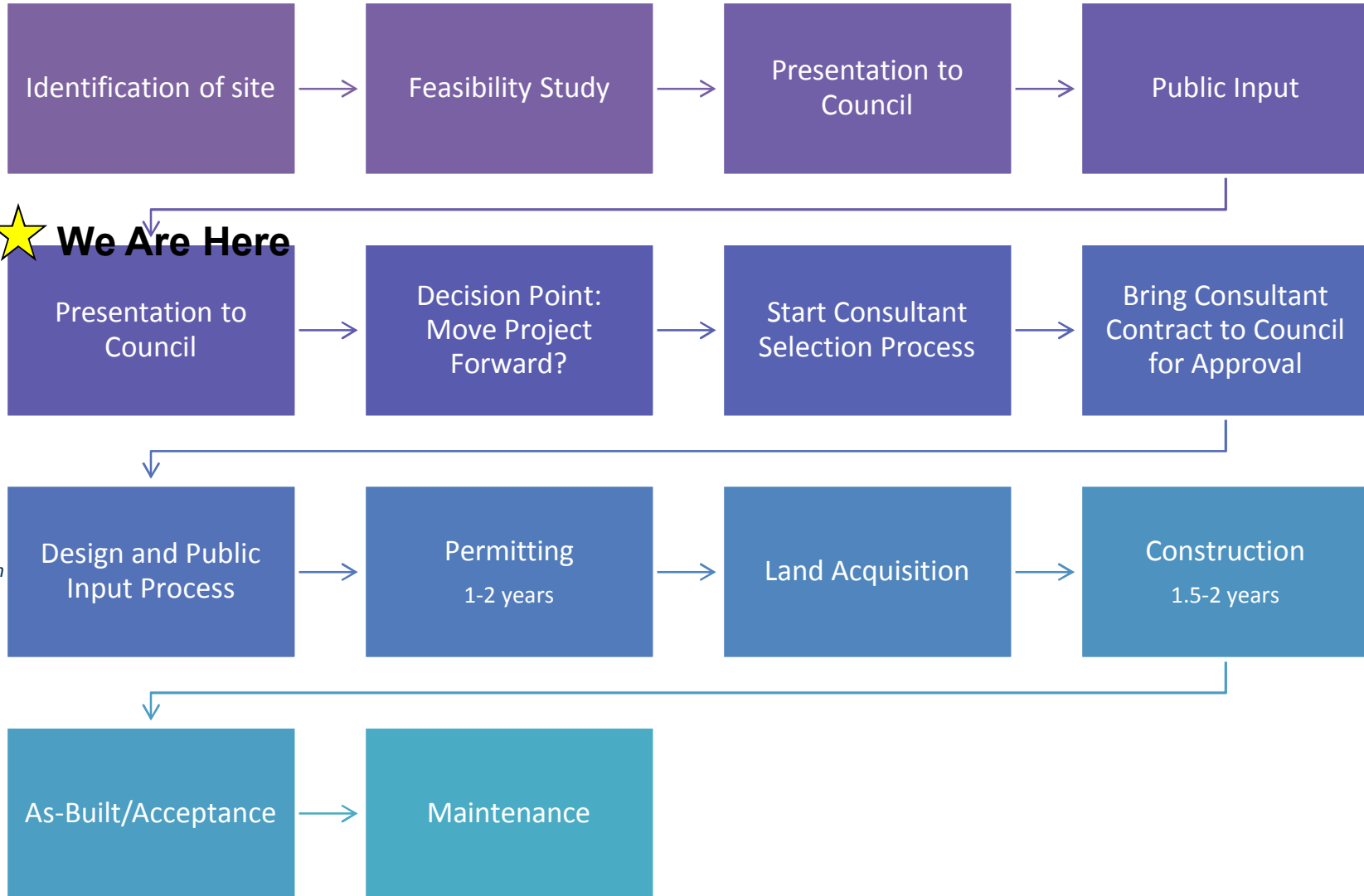


US Army Corps of Engineers





Next Steps Proposed Process



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